

REMARKS

I. STATUS OF CLAIMS

Claims 95-101, 103, and 105-216 are pending. No claim amendments are presented herein.

II. REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

The Office rejects claims 99, 100, 155-158, and 216, which recite values of Hansen's solubility parameter, as allegedly indefinite for using units that are raised to the $\frac{1}{2}$ power. Office Action at 2.

Applicant respectfully traverses. Hansen's solubility parameters are well known in the art, as shown, for example, in J. Paint Technol. 39:104-117 (1967) ("Hansen"), cited in the instant specification and in the Information Disclosure Statement filed March 13, 2009. Furthermore, Hansen's solubility parameters are defined as the square root of cohesive energy densities. See Hansen at 104, right column, Eq. (1); *see also id.* at 105, Eqs. (4)-(7), regarding solubility parameter components. Accordingly, the claims are not indefinite for using units raised to the $\frac{1}{2}$ power; they use a parameter well-known in the art which is presented in units (which happen to be raised to the $\frac{1}{2}$ power) that are standard for that parameter. For the convenience of the Office, a brief general discussion of how Hansen's solubility parameters can be used is provided below.

Solubility parameters are used in the calculation of mixing energies (i.e., the change in energy due to mixing two substances). More favorable mixing energies indicate that two materials are likely miscible or that one (such as a polymer) is likely soluble in the other (such as a solvent). Hansen provides the following equation:

$$\frac{\Delta E_{\text{mix}}}{\Phi_1 \Phi_2} = V_m(\delta_1 - \delta_2)^2$$

where ΔE_{mix} is the mixing energy, Φ_1 and Φ_2 are the dimensionless volume fractions of the materials, V_m is the average molar volume on a mole fraction basis, and δ_1 and δ_2 are the solubility parameters of the materials. *Id.* at 105, left column, Eq. 3.

This equation makes it possible to see a benefit of reporting and using solubility parameters with square-root units such as $(\text{J}/\text{cm}^3)^{1/2}$ instead of simply J/cm^3 : in the latter case, the right side of Eq. 3 of Hansen would be the more complicated $V_m(\delta_1 - 2\delta_1^{1/2}\delta_2^{1/2} + \delta_2)$ instead of the simpler form available when $(\text{J}/\text{cm}^3)^{1/2}$ units are used, i.e., $V_m(\delta_1 - \delta_2)^2$. Note that the number of arithmetic operations needed to evaluate the simpler version is lower, and that squaring is a less computationally intensive operation than taking the square root. Note also that, when evaluated, $V_m(\delta_1 - \delta_2)^2$ gives simple energy units, e.g., joules. Thus, even though the physical meaning of units of $(\text{J}/\text{cm}^3)^{1/2}$ may not be clear in isolation, those of skill in the art are familiar with how to use values with such units in making estimations of mixing energies and thereby predicting solubility.

In view of the above information, Applicant respectfully submits that claims 99, 100, 155-158, and 216 are not indefinite and requests withdrawal of this rejection.

III. DOUBLE PATENTING REJECTIONS

The pending claims stand rejected under the judicially-created doctrine of obviousness-type double patenting on one or more of eight different grounds. Each of the primary references for the obviousness-type double patenting rejections listed below is in view of the following secondary references: U.S. Patent No. 6,905,696 ("Marotta"),

HCAPLUS Abstract 1964:70247 (1961; "Klausmeier"), Flick, E.W., *Cosmetics Additives an Industrial Guide* p. 266 (1991; "Flick"), and U.S. Application Publication 2002/0064539 ("Phillippe").

(1) Claims 95-101, 103-214, and 206-216 are provisionally rejected over claims 78-167 of copending Application No. 10/528,699 in view of the secondary references (Office Action at 3);

(2) claims 95-101 and 103-216 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 85-184 of copending Application No. 10/528,835 in view of the secondary references (Office Action at 4);

(3) claims 100 and 216 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over selected claims of copending Application No. 10/529,218 in view of secondary references (Office Action at 4);

(4) claims 95-101, 103-204, and 206-216 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 77-80, 83-94, 97-107, 109-161, and 165-174 of copending Application No. 10/529,266 in view of the secondary references (Office Action at 4-5);

(5) claims 95-101, 103-204, and 206-216 are provisionally rejected on the ground of nonstatutory Obviousness-type double patenting as being unpatentable over claims 87-189 of copending Application No. 10/529,267 in view of the secondary references (Office Action at 5);

(6) claims 95-101, 103-204, and 206-216 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-92 of copending Application No. 10/585,817 in view of the secondary references (Office Action at 5-6);

(7) claims 95-101, 103-204, and 216-216 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-88 of copending Application No. 10/585,818 in view of the secondary references (Office Action at 6); and

(8) claims 95-101 and 103-216 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 8-9, and 12-140 of copending Application No. 10/949,448 in view of the secondary references (Office Action at 6-7).

A terminal disclaimer under 37 C.F.R. § 1.321(c) is herewith submitted to overcome these rejections; said terminal disclaimer disclaims the term of any patent that issues from the instant application that extends beyond the expiration date of any patents issuing from the applications used as primary references in the above-listed provisional obviousness-type double patenting rejections.

IV. CONCLUSION


In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: 
Adam M. Breier, Ph.D.
Reg. No. 63,718
(202) 408-4342

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